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Cover Stories:

Major Scientific Publications Featuring NRI-funded Research



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Zhongchi Liu, Robert G.
Franks, and Vincent P. Klink
(2000) *Regulation of Marginal
Tissue Formation by LEUNIG
and AINTEGUMENTA. Plant
Cell* Oct;12(10):1879-1891.



gynoecium is the female reproductive organ located in the center of a flower. It is of great economical importance because it is the organ that produces and bears the seeds. In some cases, gynoecia, upon maturation, serve as fruits and vegetables such as apples and tomatoes. In the small flowering plant *Arabidopsis thaliana*, a close relative of mustard, a gynoecium is composed of two fused compartments, within which ovules, the precursor of seeds, develop. However, how these ovules are generated from the placenta tissue within the gynoecium and what genes regulate their generation are largely unknown. With the NRI funding, Liu and colleagues demonstrated that *LEUNIG* and *AINTEGUMENTA* are two key regulators of placenta and ovule formation in *Arabidopsis thaliana*. The crucial role of *LEUNIG* and *AINTEGUMENTA* in the formation of these reproductive tissues is only revealed when the activities of both genes are eliminated simultaneously. The cover picture is a scanning electron microscopic image of a mutant *Arabidopsis* flower lacking the function of both of these genes. In this double mutant flower, the two compartments of the gynoecium are not fused together, revealing the absence of placenta and ovules within them. This finding has shed light on the mechanism of placenta and ovule formation and serves as the basis for further experimentation on the genetic engineering of seed formation and plant reproduction.

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